I claim:

1. A test machine adapted to test the wear, wear-preventative and friction characteristics of a power-rotated first test specimen engaging a non-rotated second test specimen, the test machine comprising:

a chuck connected for power rotation of the first test specimen about an axis;

a holder adapted to hold the second test specimen in a position engageable with the first test specimen;

a force actuator connected for positioning the holder along said axis, the actuator being operable to establish a compressive test load between the test specimens, and

a load sensor connected in the load path that includes the actuator and test specimens to directly measure and provide an output signal indicative of the real-time compressive forces applied thereto during a test.

2. The test machine of claim 1 in which the load sensor is aligned in said axis between the actuator and the second test specimen for direct detection of the compressive test force therebetween.

3. The test machine of claim 1 in which the force actuator comprises a pneumatic diaphragm actuator aligned along said axis.

4. The test machine as defined in claim 1 further comprising at least one of a visual display module and an automated control module, the load sensor being connected to said at least one module and providing an output signal thereto indicative of the real-time compressive forces applied to the test specimens during the test.

5. The test machine as defined in claim 4 further comprising an input reference module connected to supply a reference load signal to the control module, the control module being operably connected to the diaphragm actuator and adapted to adjust the compressive test load established therein according the reference load signal and the real-time output signal from the load sensor.

6. The test machine as defined in claim 1 further comprising a torque sensor operably connected to the holder and providing an output signal indicative of the frictional torque generated between the test specimens during a test.

7. The test machine as defined in claim 1 further comprising a linear wear sensor connected to measure the linear movement of the test specimens during a test.

8. The test machine as defined in claim 1 further comprising a data analysis module connected to the load sensor and adapted to numerically manipulate the output signal therefrom for determining one of a wear, wear-preventative and friction characteristic relationship therewith.

9. A test machine adapted to test wear, wear-preventative and friction characteristics of a power-rotated first test specimen engaging a non-rotated second test specimen, the test machine comprising:

a chuck connected for power rotation of the first test specimen about an axis;

a holder adapted to hold the second test specimen in a position engageable with the first test specimen;

a force actuator connected for positioning the holder along said axis, the actuator being operable to establish a compressive test load between the test specimens, and

a linear wear sensor connected in-line with said axis to measure and provide an output signal indicative of the real-time linear movement of the test specimens during a test.

10. The test machine as defined in claim 9 in which the force actuator comprises a pneumatic diaphragm actuator aligned along said axis.

11. The test machine as defined in claim 9 in which the wear sensor is connected to said actuator for axial movement therewith and for direct detection of axial movement thereof.

12. The test machine as defined in claim 11 in which the wear sensor is aligned along said axis.

13. The test machine of claim 9 further comprising a torque sensor operably connected to the holder for sensing the frictional torque generated between the test specimens during a test.

14. The test machine as defined in claim 9 further comprising at least one of a visual display module and an automated control module, the wear sensor being connected to said at least one module and providing an output signal thereto indicative of the real-time linear movement of the test specimens during the test.

15. The test machine as defined in claim 9 further comprising an input reference module connected to supply a reference wear signal to the control module, the control module being operably connected to the diaphragm actuator and adapted to adjust the compressive test load established therein according to the relationship between the reference wear signal and the output signal from the wear sensor.

16. The test machine as defined in claim 9 further comprising a data analysis module connected to the wear sensor and adapted to numerically manipulate the output signal therefrom for determining one of a wear, wear-preventative and friction characteristic relationship therewith.

17. A test machine adapted to test wear, wear-preventative and friction characteristics of a power-rotated first test specimen engaging a non-rotated second test specimen, the test machine comprising:

a chuck connected for power rotation of the first test specimen about an axis;

a holder adapted to hold the second test specimen in a position engageable with the first test specimen;

a diaphragm actuator aligned with said axis and adapted to develop a compressive test load along said axis for applying to the test specimens during a test,

a load-rod extending along said axis and connected between the holder and the actuator for transmission of the compressive test load therebetween,

a linear bearing element through which the load-rod extends for low-friction linear guidance thereof along said axis,

at least one of (i) a visual display module operative to display the compressive test load and (ii) an automated control module operably connected to the diaphragm actuator and adapted to adjust the compressive test load, and

a load sensor mechanically coupled in-line in the load path between the actuator and the test specimens to directly measure the compressive forces applied thereto during a test, the load sensor being electrically connected to said

at least one module and providing an output signal thereto indicative of the real-time linear movement of the test specimens during the test.

18. The test machine as defined in claim 17 further comprising a linear wear sensor operably coupled in-line with said axis to said diaphragm actuator for direct measurement of linear movement thereof.

19. The test machine as defined in claim 17 further comprising a data analysis module connected to the load sensor and adapted to numerically manipulate the output signal therefrom for determining one of a wear, wear-preventative and friction characteristic relationship therewith.